it may not be generally known that more than thirty years ago a skating pond was constructed in Liverpool, consisting, I believe, entirely of crystallised Glauber's salt. I have a perfect recollection of this miniature lake with its grotto-like surroundings, of its black-looking ice with innumerable white scorings marking the tracks of the skaters, yet, strange to say, I cannot remember whether I skated on it myself. The impression that I did seems to be confused with other skating scenes. This perhaps does not look like very reliable evidence, but that the "rink" (under another name) of artificial ice did exist, and was popular, will no doubt be affirmed by many witnesses besides myself. The date would be about 1845, if I am not mistaken, and the speculation ultimately failed owing to a public impression (possibly a wrong one) that the exhalations from the surface of the pond caused sickness and headache. R. H.

The Stone in the Swallow

YOUR correspondent, Dr. P. P. C. Hoek, requests information respecting the origin of the fable to which the poet Longfellow refers at the end of the first part of "Evangeline"—"The stone in the nest of the swallow." In Burton's "Anatomy of Melancholy," p. 434, at the top (Wm. Tegg's edition), after describing in the delightfully quaint style of the age the curative virtues of various stones, he quotes the following:—

"In the belly of a swallow there is a stone called 'chelidonius,' which, if it be lapped in a fair cloth and tied to the right arm, will cure lunatics, madmen, make them amiable and merry."

In a foot-note there are references made to the following authors:—Albertus, Eucellius, cap. 44, lib. 3; Plin, lib. 37, cap. 10; Jacobus de Dondis, &c.

It seems probable that Longfellow got his version of the story from some of the descendants of the French Acadians, to whom the poem relates, and it may have come down from the same sources from which Burton derives his account of the matter. It may be noted that the two versions do not in any way clash, Burton's simply referring to the whereabouts of the stone, "in the belly of the swallow," its name and benefits to those afflicted with insanity; while Longfellow's version relates more to the finding and locality of the stone and its uses to the young swallows, leaving its supposed value to man, depending on the general term of being "lucky." JOHN LOCKE

Trinidad, West Indies, May 24

Stags' Horns

IN reference to the opinions recently expressed in your journal regarding the disappearance of the horns of stags, deer, &c., I may mention that this is usually attributed here to the action of rodents rather than of the deer themselves. Even if a deer should occasionally be seen gnawing a horn it would be very difficult to account for the disappearance of all the annual crop of antlers in this way. From the nature of their dentition (having no incisor teeth in the upper jaw) the destruction of such a mass of hard material must be very difficult. Moreover slight examination will show whether the tooth marks are those of the large teeth of a deer or of the small incisors of a rodent.

Antioch College, Ohio, U.S.A. E. W. CLAYPOLE

ON SOME POINTS CONNECTED WITH TERRESTRIAL MAGNETISM

I HAVE on more than one previous occasion brought forward some of the various points which are here grouped together. These points are three in number.

(α) Regarding the sustaining power of the earth's magnetism.

(β) Regarding the diurnal and other changes of the same.

(γ) Regarding earth currents and auroras.

I may state at once that this only professes to be a working hypothesis.

(α) *Regarding the Sustaining Power of the Earth's Magnetism.*—I do not here intend to discuss the cause of the earth's magnetism, but I would ask in the first place if it is not possible that this cause may be something small and one which (assuming it to continue at the present moment) we may not readily perceive. If we assume this cause or magnetic nucleus to be small is it not possible to imagine that there is a machinery which acts upon this nucleus (just as we have in certain magneto-electric engines) so as to swell up the magnetism of the earth ultimately to saturation.[1]

May not this machinery be the great convection currents, the anti-trades, that go from the equator to the poles in the upper regions of the earth's atmosphere, and which may be looked on as conductors moving across lines of magnetic force?

It would appear to me that the tendency of such currents will be to swell up and sustain the magnetism of the earth.

(β) *Regarding the Diurnal and other Changes of Terrestrial Magnetism.*—It will of course be natural, entertaining the views now enunciated, to regard the diurnal changes of the convection currents of the earth's atmosphere, as these are manifested in the upper regions, to be the cause of the diurnal changes of terrestrial magnetism.

If this view be taken it might be argued that wind changes in these upper regions should also produce magnetic variations. The reply is that apparently they do. In conjunction with Mr. Morisabro Hiraoka I have compared together the simultaneous records of magnetic declination ranges at Kew and at Trevandrum, and I find evidence of a progress of things from west to east, so that on the whole a particular magnetic-range phenomenon occurs at Kew 9·7 days before it occurs at Trevandrum. Again, I have attempted to show, in conjunction with Mr. Dodgson, that a particular magnetic phenomenon occurs at Kew one day before it occurs at Prague.

It would thus appear that there is a progress of magnetic phenomena from west to east, just as we know there is a progress of meteorological phenomena. As, however, the meteorological phenomena which we can examine occur in the *lower* atmospheric regions, while the magnetic phenomena are, according to this hypothesis, associated with currents in the *higher* regions, it does not follow that magnetic and meteorological phenomena should travel from west to east at the same rate. I may also mention that we have reason to believe that magnetic changes lag behind corresponding solar changes just as meteorological changes would do.

It is manifest that it will be comparatively easy to settle the fact of a progress from west to east of magnetic weather, and that if such exists it will most readily ally itself with the hypothesis above mentioned.

In the next place, if we regard those changes in the convection-currents of the earth which depend on the year we have reason to imagine that such are most pronounced at the equinoxes. It is also well known that magnetic disturbances are most frequent at these times.

Let us next proceed to regard the secular change of the earth's magnetism. To account for this magneticians have felt the need of something movable, and the hypothesis of a "little earth," a solid nucleus moving within the recesses of our planet, has found much support. But is it not more likely that the result may be caused by a secular variation in the distribution of the convection-currents of the earth? If the question be asked, What reason have we for imagining the existence of such a variation, the answer will be, A much better reason than we have for entertaining the conception of a "little earth." For there is some reason, at any rate, for imagining the power of the sun to be subject to a complicated series of periodicities. Now a secular variation in the power of the sun would produce a secular change not only in the intensity, but in the direction of the convection-currents of the earth, and, according to the above hypo-

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[1] If I am not mistaken Sir W. Thomson is inclined to regard the earth as a magneto-electric engine.

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thesis, these in their turn would produce a secular magnetic change.

(γ) *Regarding Earth Currents and Auroras.*—I have for some considerable time looked on the earth as a Ruhmkorff's coil with a magnetic nucleus. Above this nucleus we may suppose that we have the primary rocks, which are non-conductors, while above these we have the moist or comparatively moist surface of the earth, which is a conductor. Above this, again, we have the lower strata of the atmosphere, which are non-conductors, while above this we have the upper strata, which are conductors.

Now suppose that a small but abrupt change of the earth's magnetism takes place, no matter how. We need not enter into the causes of such.

We have thus two secondary coils, if I may use the expression: (1) the moist surface of the earth, (2) the upper regions of the atmosphere; and both of these will be animated with secondary currents, on account of the abrupt change of the earth's magnetism. These secondary currents will be in one direction for a magnetic change of one kind, and in the opposite direction for a magnetic change of the opposite kind.

Now whenever there are magnetic storms, that is to say, when there are small but abrupt changes of the earth's magnetism, it is well known from the Greenwich records that we have violent earth currents, which are alternately positive and negative, and that we have also auroral displays in the upper regions of the earth's atmosphere. We cannot examine the auroral displays as we can the earth currents. But with regard to earth currents I would remark that the *form* of the phenomena they display is entirely against the supposition that such currents are the main cause of the changes in terrestrial magnetism, and in favour of that which maintains that they are secondary currents induced by magnetic changes.

In conclusion I would guard against its being supposed that all luminous appearances in the atmosphere are due to the same cause. I only hold that certain appearances which occur at times of magnetic perturbation and simultaneously throughout a large portion of the earth have the origin now mentioned. B. STEWART

ON A NEW JELLY-FISH OF THE ORDER TRACHOMEDUSÆ, LIVING IN FRESH WATER

ON Thursday last, June 10, Mr. Sowerby, the secretary of the Botanical Society of London, observed in the tank in the water-lily house in Regent's Park a peculiar organism, of which he was kind enough to place a large number at my disposal on the following Monday.

The organism proves to be an adult medusa belonging to the order Trachomedusæ and the family Petasidæ of Haeckel's system ("System der Medusen," erster Theil). It comes nearest among described genera to Fritz Müller's imperfectly known *Aglauropsis* from the coast of Brazil.

The most obviously interesting matter about the form under notice is that it occurs in great abundance in perfectly fresh water at a temperature of 90° Fahr.

Hitherto no medusa of any order has been detected in fresh water—except perhaps some stray estuarine forms (? Crambessa).

It is exceedingly difficult to trace the introduction of this animal into the tank in the Regent's Park, since no plants have been recently (within twelve months) added to the lily-house, and the water is run off every year. Probably a few specimens were last year or the year before present in the tank, and have only this year multiplied in sufficient abundance to attract attention. Clearly this medusa is a tropical species, since it flourishes in water of the high temperature of 90° Fahr.

Mr. Sowerby has observed the medusa feeding on Daphnia, which abounds in the water with it.

The present form will have to be placed in a new genus, for which I propose the name Craspedacusta, in allusion to the relation of its otocysts to its velum.

It is one of the sub-class Hydromedusæ or Medusæ craspedotæ, and presents the common characters of the order Trachomedusæ (as distinguished from the Narcomedusæ) in having its genital sacs or gonads placed in the course of the radial canals. It agrees with all Tracholinæ (Trachomedusæ and Narcomedusæ) in having endodermal otocysts, and it further exhibits the solid tentacles with cartilaginoid axis, the centripetal travelling of the tentacles, the tentacle rivets (Mantelspangen), the thickened marginal ring to the disk (Nessel ring) observed in many Tracholinæ.

Amongst Trachomedusæ, Craspedacusta finds its place in the Petasidæ, which are characterised as "Trachomedusæ with *four* radial canals, in the course of which the four gonads lie, with a long tubular stomach and no stomach-stalk."

Amongst Petasidæ it is remarkable for the great number of its tentacles, which are *all* solid; and for its very numerous otocysts. Further, it is remarkable among all Hydromedusæ (velate medusæ, that is, exclusive of Charybdæa) for the fact that centrifugal radiating canals pass from the otocysts *into the velum, where they end cæcally.*

The genus may be characterised as follows:—

MOUTH quadrifid, with four per-radial lobes.

STOMACH long, quadrangular, and tubular, projecting a good deal below the disk.

DISK, saucer-shaped, that is, flattened.

RADIATING CANALS 4, opening into the marginal canal.

GONADS 4, in the form of 4 oval sacs, depending into the cavity of the subumbrella from the four radiating canals.

MARGINAL or RING CANAL voluminous.

CENTRIPETAL CANALS (such as those of Olindias, Geryonia, &c.) absent.

TENTACLES solid; in three sets, which are placed in three superimposed horizons:—

1. A set nearest the aboral pole, of 4 large per-radial tentacles. These are the *primary* tentacles.
2. A second tier of (in large specimens) 28 medium-sized tentacles placed between these in four groups of seven. These are the *secondary* tentacles.
3. A third tier of (in large specimens) 192 small tentacles placed in groups of six between adjacent secondary tentacles. These are the *tertiary* tentacles.

TENTACLE-RIVETS (Mantel-spangen) connecting the roots of the tentacles with the marginal ring (Nessel-ring) are connected with all the tentacles of each of the three horizons.

OTOLITHS placed along the line of insertion of the velum—about eighty in number (fewer in small specimens). From sixteen to twenty are placed between successive per-radial tentacles arranged in groups of two or three between the successive secondary tentacles.

VELAR CENTRIFUGAL CANALS (which are really the elongated otocysts) are peculiar to this genus, passing from the otoliths (one inclosing each otolith) into the velum, and there ending blindly. They appear to correspond in character to the *centripetal* canals found in other Trachomedusæ in the disk.

OCELLI are absent.

[The presence of velar otocystic canals constitute the chief peculiarity of the genus Craspedacusta, and may necessitate the formation of a distinct family or sub-order for its reception. The minute structure of the otoliths and canal-like otocysts I am now engaged in investigating.]

The above characters are derived from the examination of *adult* male specimens, which were freely discharging ripe, actively motile spermatozoa.

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